

INTRODUCTORY COMMENTS

Reconsideration of this application, as amended above, is respectfully requested.

Claims 31-57 are currently pending in the application. Claims 31-57 stand rejected.

Claims 31, 36, 41, 47, 54, & 57 have been amended. Support for the amendments is found in the specification, the drawings, and in the claims as originally filed.

New claims 58-62 have been added. Support for the new claims is found in the specification, the drawings, and in the claims as originally filed.

Applicants submit that the amendments and new claims do not add new matter.

REMARKS

Applicants respectfully request consideration of the following remarks.

Objections to Drawings pursuant to 37 CFR 1.121(d); MPEP 608.02

In the office action dated December 15, 2004, the drawings are objected to for the sectional views not being properly crosshatched per MPEP 608.02. Corrected drawings have been provided in compliance with 37 CFR 1.121(d) as required.

Claim Objections

In the office action, claim 57 is objected to as depending from claim 56, in that a BGA recited in claim 56 cannot be further limited into an LGA as recited in claim 57. Applicant agrees with examiner's suggestion that this situation resulted from a

typographical error, and that claim 57 should properly depend from independent claim 54. Therefore, claim 57 has herein been so amended.

Rejections Under 35 U.S.C. § 102(e)

In the office action dated December 15, 2004, claims 31-44, 45, and 47-55 stand rejected under 35 U.S.C. §102(e) as anticipated by US 6,555,208 of Takada, et al. (hereafter Takada). The office action asserts “Takada discloses, referring to figure 4, a printed circuit board (PCB)...at least one padless via (203) extending from the first signal routing layer to the electrically conductive layer, the at least one padless via in electrical contact with the electrically conductive layer (see col. 14, lines 10-20).” (Office action dated 12/15/04, page 3, paragraph 3.) Applicants disagree that Takada so discloses.

In col. 14, lines 24-26, Takada continues by reciting “As shown in FIG. 5,...[a]n upper end portion 231 of the hole 203 for conductivity is surrounded by the upper face pattern 201 having 0.025 mm in width B.” Additionally, Takada’s independent claim 1 recites “said upper face pattern has a width from 0.05 to 0.2 mm around said hole for conductivity.” (Column 20, lines 20-21) The structure described and claimed by Takada and shown in the related drawings, is essentially similar to a structure known in the art as a ‘via-in-pad’. In via-in-pad, a hole is formed in an insulating substrate through a pad of upper face pattern material, such that the outer dimension of the pad is greater than the outer dimension of the hole, leaving a width of pad material surrounding the hole. A pad of upper surface pattern material such as is described by Takada, with a via formed entirely within its perimeter is not a ‘padless via’ as claimed by applicants.

Applicants submit that Takada fails to teach a padless via, and that the claim limitation of at least one padless via recited in applicants’ independent claim 31 renders

applicants' claims patentably distinct from Takada. Therefore, applicants respectfully submit the 35 U.S.C. 102(e) rejection should be withdrawn from independent claim 31, and the claim is in condition for allowance without amendment.

Similarly, Takada also fails to teach the padless vias recited in applicants' independent claims 36, 41, 47, and 54, and applicants respectfully submit that these claims are allowable for essentially the same reason as independent claim 31.

In as much as claims 32-35, 37-40, 42-46, 48-53, and 55-57 depend from claims 31, 36, 41, 47, and 54 respectively, applicants submit the 35 U.S.C. 102(e) rejection should be similarly withdrawn from these claims.

Rejections Under 35 U.S.C. § 103(a)

In the office action dated December 15, 2004, claim 44 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Takada. The office action asserts that Takada discloses the claimed invention, except that Takada does not specifically state that a width of the at least two conductive traces is approximately 3 mils. Instead, Takada generically states that the width can be varied (Takada, column 15, lines 25-35). Thus, the office action asserts that forming the claimed traces with a width of 3 mils would be obvious to one of ordinary skill in the art at the time of the invention. (Page 7, paragraph 4). Applicants respectfully disagree that this is so.

As applicants demonstrated in the prior section, Takada in its entirety fails to disclose applicants' invention, including the recitation cited in the office action, in as much as Takada fails to disclose the at least one padless via.

Therefore, applicants respectfully submit that the U.S.C. §103(a) rejection of claim 44 is improper and should be withdrawn, as Takada fails to disclose or make obvious the applicants' claimed invention including the at least one padless via.

The office action further rejects claims 46, 56, and 57 under 35 U.S.C. 103(a) as being unpatentable over Takada in light of US 2003/0001287 (hereafter Sathe). (Office action dated 12/15/2004, page 8, paragraph 1) The office action asserts that Takada discloses the claimed invention, except Takada does not specifically state that the PCB is a motherboard and the component is a processor. However, the office action further asserts that the disclosure of Sathe demonstrates it is well known in the art that Takada's PCB could be considered a motherboard, and that processors are attached to said boards. (Page 8, paragraph 2) Additionally, the office action states that at the time of invention, it would have been obvious to comprise the component of a well known BGA package or LGA package. (Page 8, paragraph 3) Therefore, the office action asserts it would have been obvious to one having ordinary skill in the art, at the time of invention, to comprise the board and component in Takada of a motherboard and processor respectively.

As applicants demonstrated in discussion of the 35 U.S.C. 102(e) rejection, Takada fails to disclose applicants' invention in as much as Takada fails to disclose the at least one padless via claimed in independent claims 41 and 54, from which claims 46, and 56 & 57 depend, respectively. As cited in the office action, the recitations of Sathe are unrelated to padless vias, and so the combination of Takada with Sathe also fails to teach or make obvious applicants' invention including the at least one padless via.

Therefore, applicants respectfully submit that the U.S.C. §103(a) rejection of claim 46, 56 & 57 is improper and should be withdrawn. Takada fails to disclose the

at least one padless via in applicants' independent claims, and the cited combination of Takada with Sathe fail to make obvious applicants' invention including the at least one padless via. Therefore, the combined references are improper as a basis for a 35 U.S.C. 103(a) rejection for claims 46, 56, and 57.

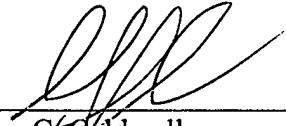
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CONCLUSION

In light of the points and arguments set forth herein, applicants respectfully submit that the rejections have been properly overcome, and the claims are allowable as amended.

Please charge any shortages and credit any overages to Deposit Account No. 02-2666.

Respectfully submitted,



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